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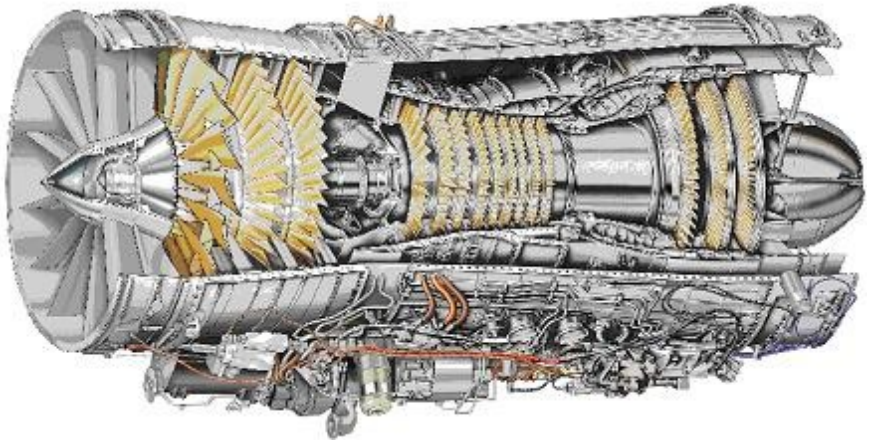
F118-GE-101/U-2



PM – BOB PERRAUT

WR-ALC/LXAE

1 Oct 2004

OVERVIEW

Rapidly delivering war-winning capability

- Background
- Metrics
- Issues
- Life Management
- Assessment

F118-GE-101 IPT

U.S. AIR FORCE

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- **Lead: Bob Perraut**
- **Engineering: Steve Kaldon**
- **Item Management: Lavonia Abram**
- **Contracting: Sue Smith**
- **Finance: Wanda Bragg / Adair Rambo**
- **Logistics Support: Weyman Bond**
- **Technical Services: MSgt Mike Stefanos**
- **SETA Support: Rod Bryan**
- **GE Model Engineer: Eric Lewis**
- **GEAE Program Manager: David Kuehner**

ENGINE LOCATIONS

U.S. AIR FORCE

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36 Aircraft **55 Engines**

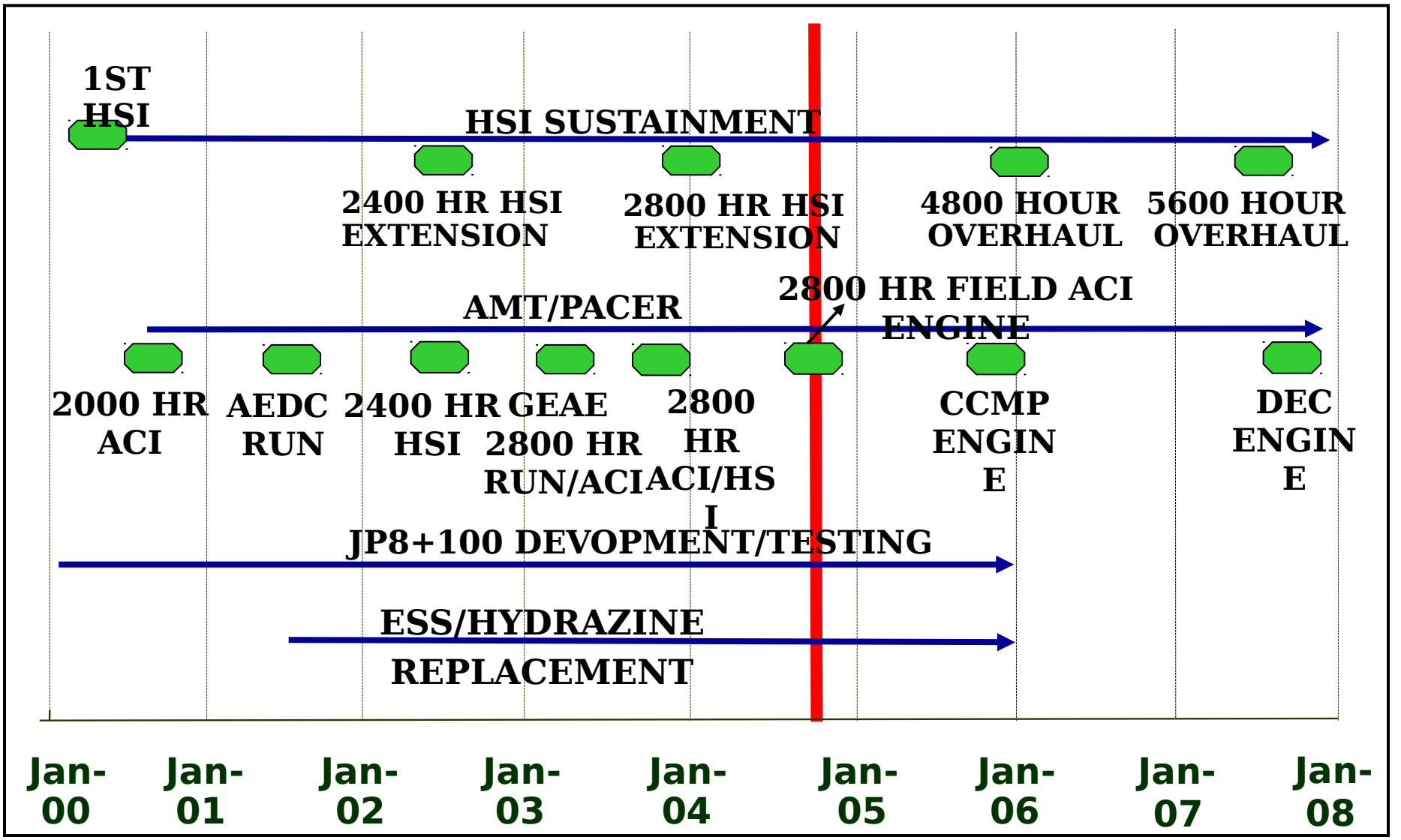
29 U-2S / 5 U-2ST / 2 ER-2 **1 19077-1**

LOCATION	A/C	SPARES	OTHERS
Beale AFB	16	6	
PDM	4	0	
Site 2 (Palmdale)	2	0	
Det 4	6	3	
Cyprus		3	1
Osan	3	2	
NASA	2	0	
GEAE Edwards		N/A	N/A (4 INW)
Depot (KAC)	N/A	N/A	(2 INW) (2 AWS to Field)

EFH

MASTER SCHEDULE

Rapidly delivering war-winning capability



Class A Rate Engine Related

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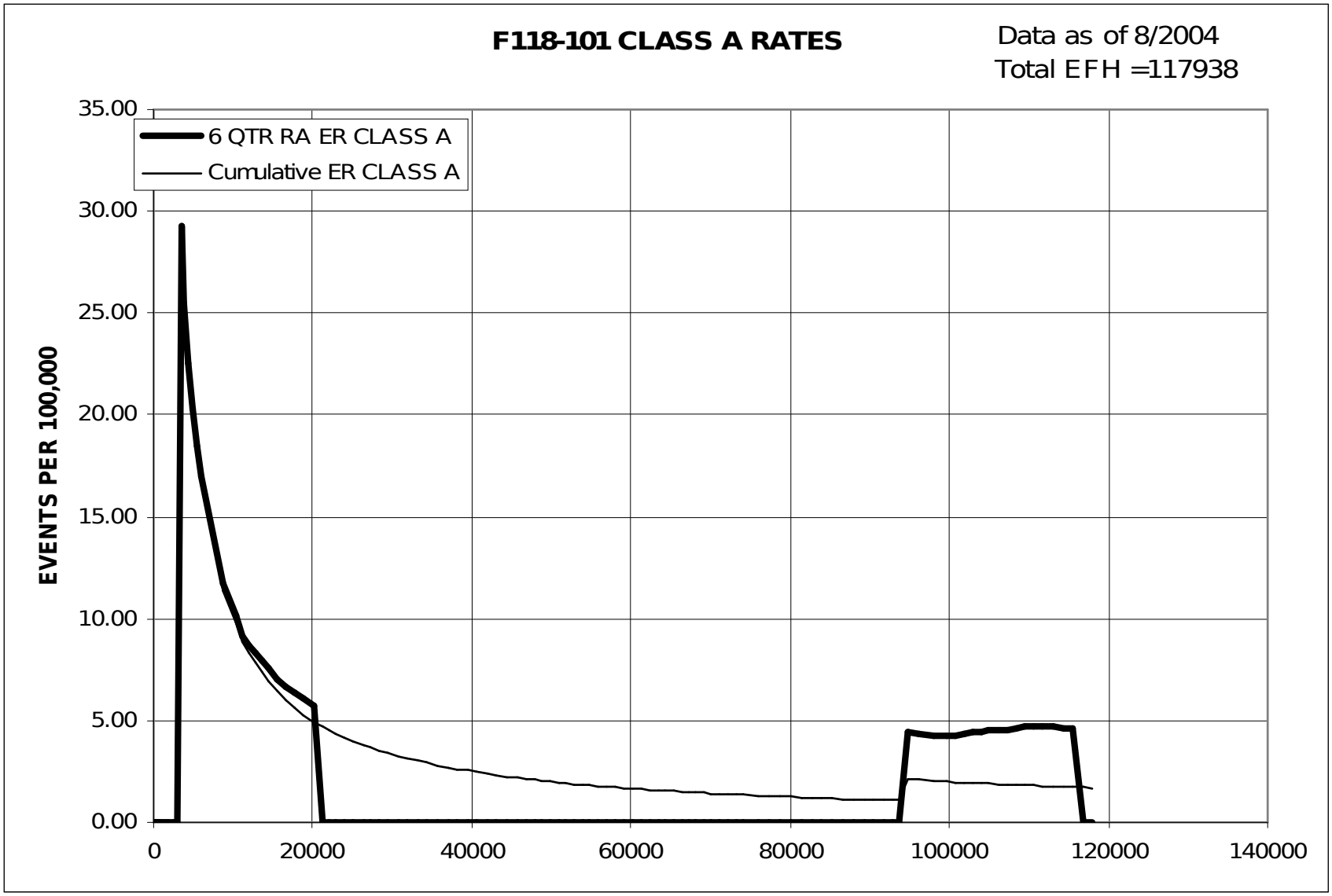

NRIFSD

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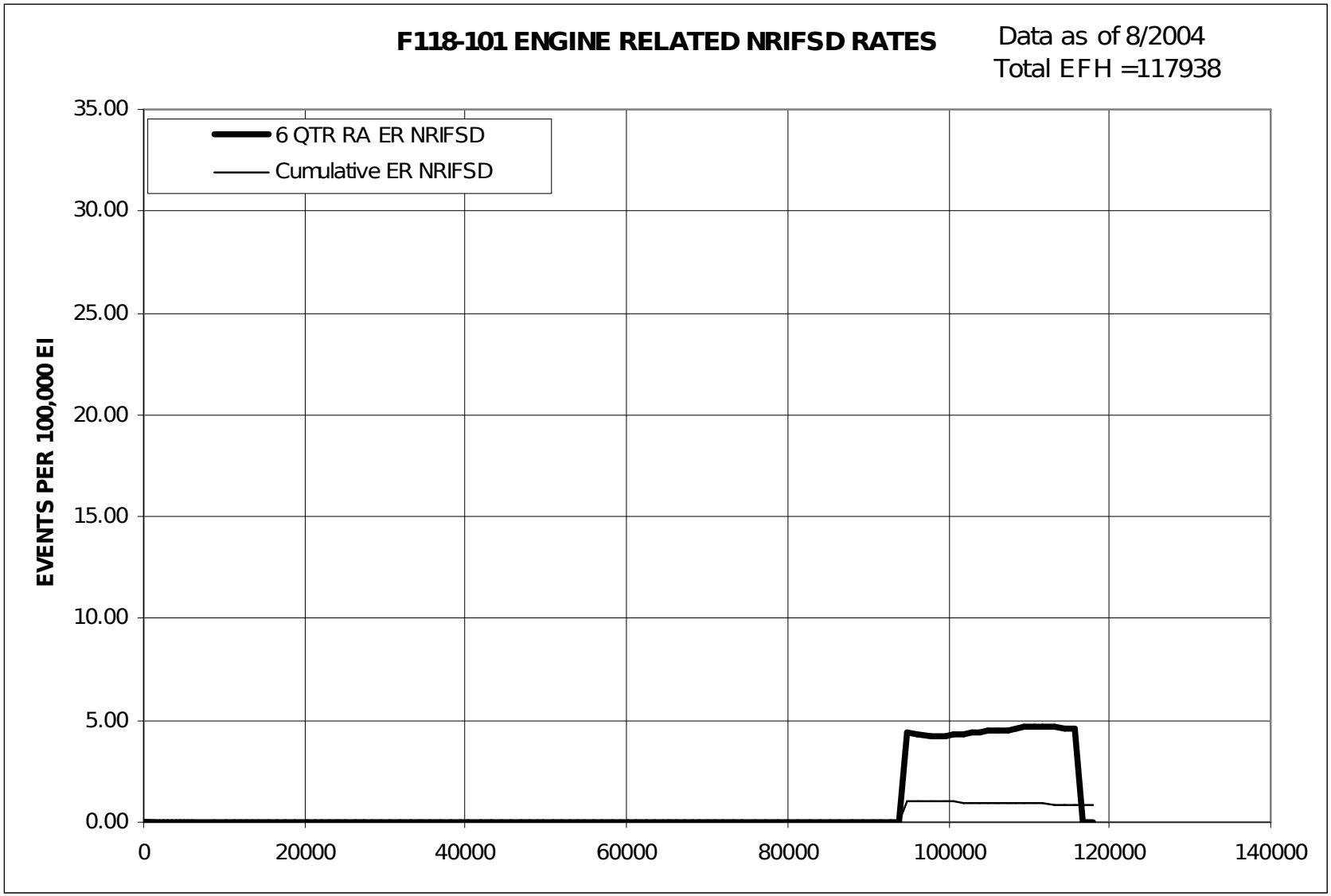

BASE STOCK LEVEL

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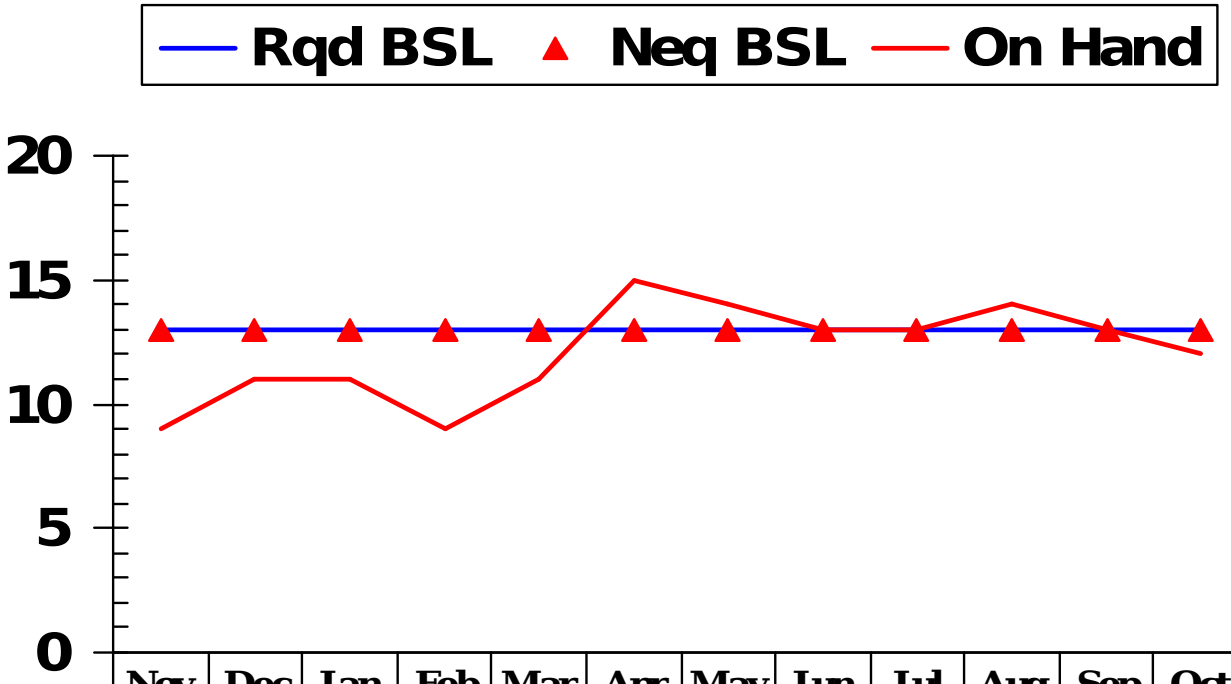
G

- **Issues**

  None

- **Action Plan**

  None



	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Rqd BSL	13	13	13	13	13	13	13	13	13	13	13	13
Neq BSL	13	13	13	13	13	13	13	13	13	13	13	13
On Hand	9	11	11	9	11	15	14	13	13	14	13	12

As of 1 Oct 04

GET WELL DATE: N/A

SERVICEABLE SPARES

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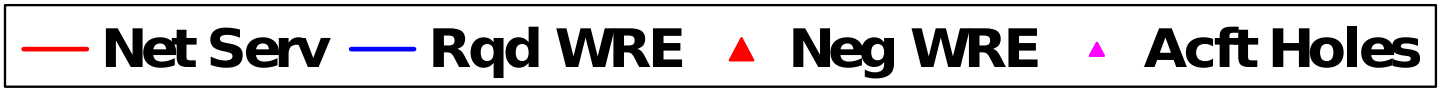
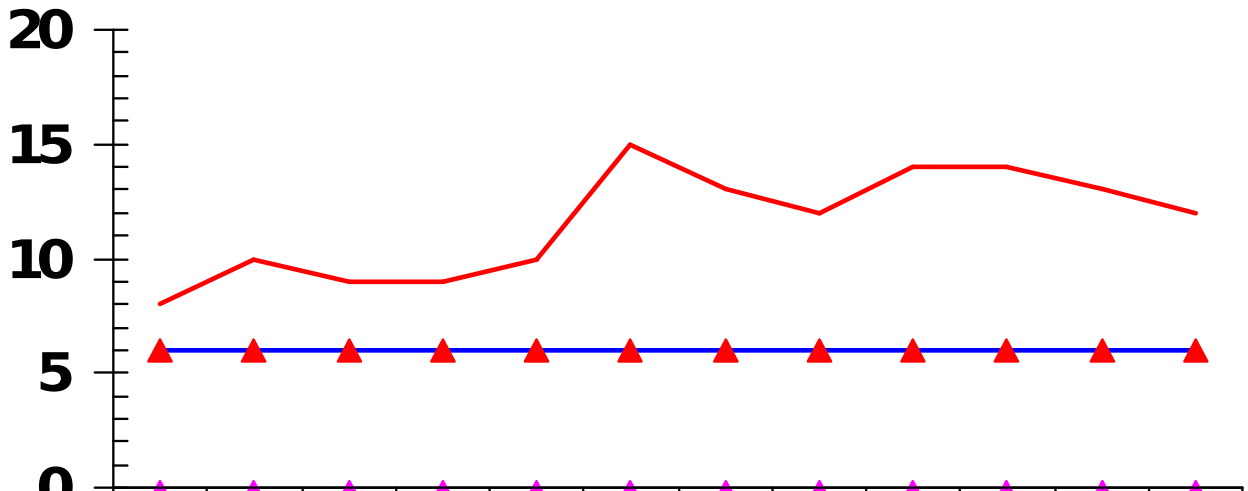


- **Issues**

  None

- **Action Plan**

  None



	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Net Serv	8	10	9	9	10	15	13	12	14	14	13	12
Rqd WRE	6	6	6	6	6	6	6	6	6	6	6	6
Neg WRE	6	6	6	6	6	6	6	6	6	6	6	6
Acft Holes	0	0	0	0	0	0	0	0	0	0	0	0

As of 1 Oct 04

GET WELL DATE: N/A

ENMCS

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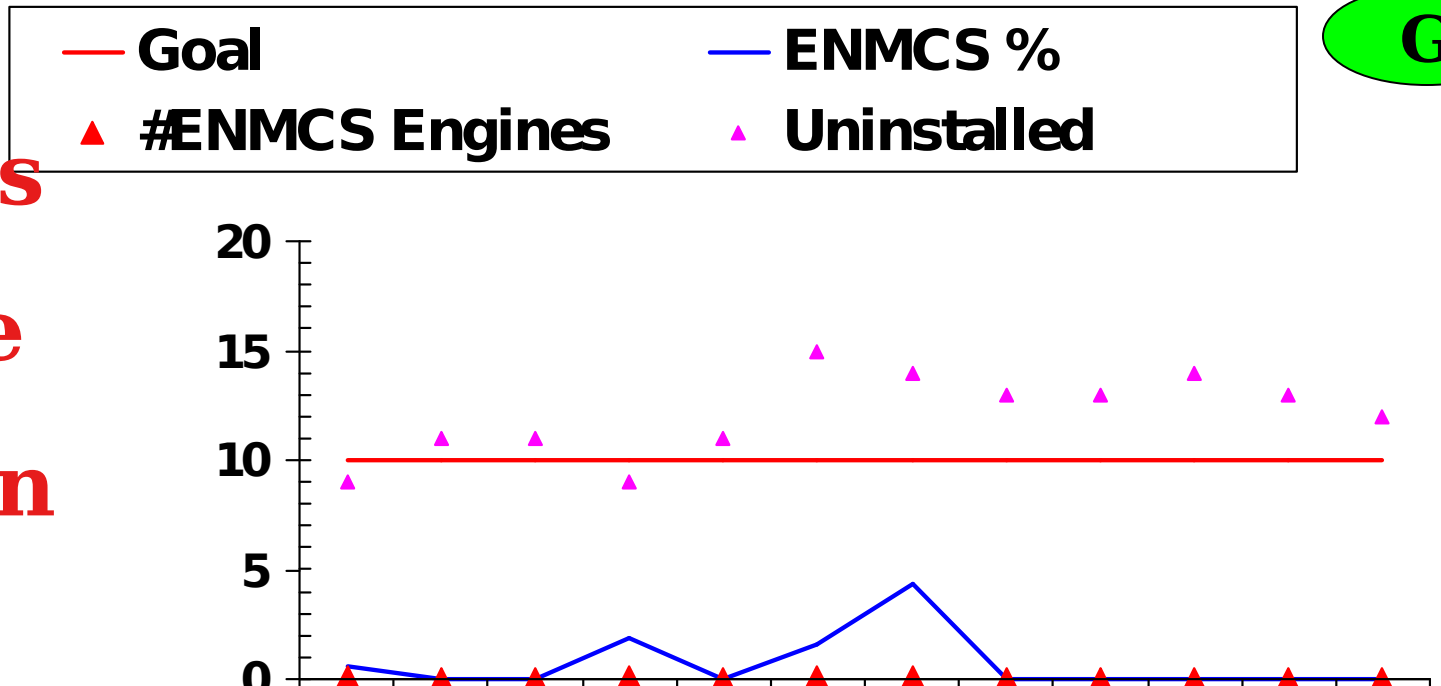
G

- **Issues**

  None

- **Action Plan**

  None



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Goal	10	10	10	10	10	10	10	10	10	10	10	10
ENMCS %	0.58	0.00	0.00	1.90	0.00	1.59	4.39	0.00	0.00	0.00	0.00	0
#ENMCS Engines	0.12	0.00	0.00	0.11	0.00	0.06	0.07	0.00	0.00	0.00	0.00	0
Uninstalled	9	11	11	9	11	15	14	13	13	14	13	12

1 Oct 03 – 30 Sep 04

GET WELL DATE: N/A

MICAP STATUS

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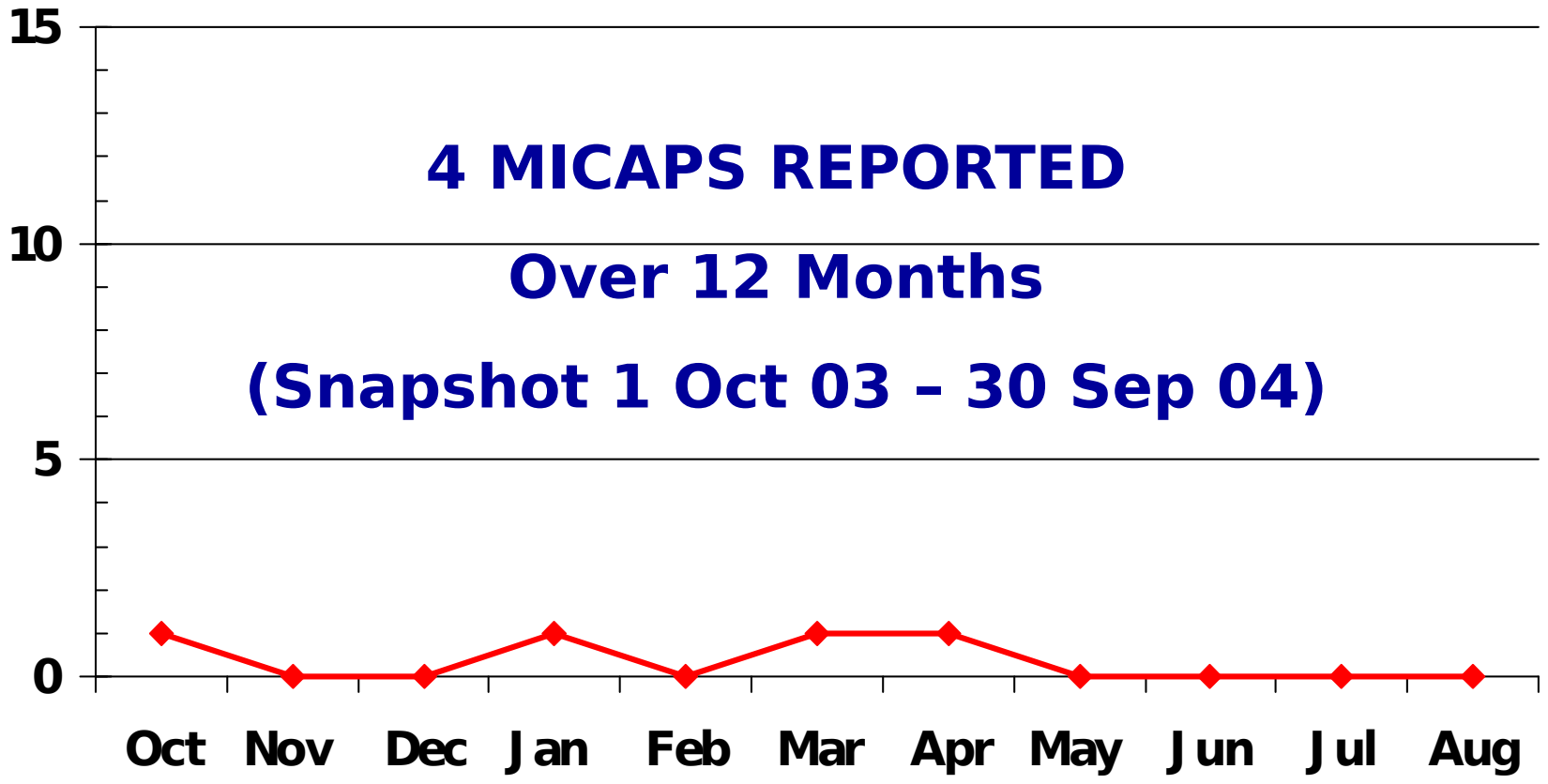

AVERAGE TIME ON WING

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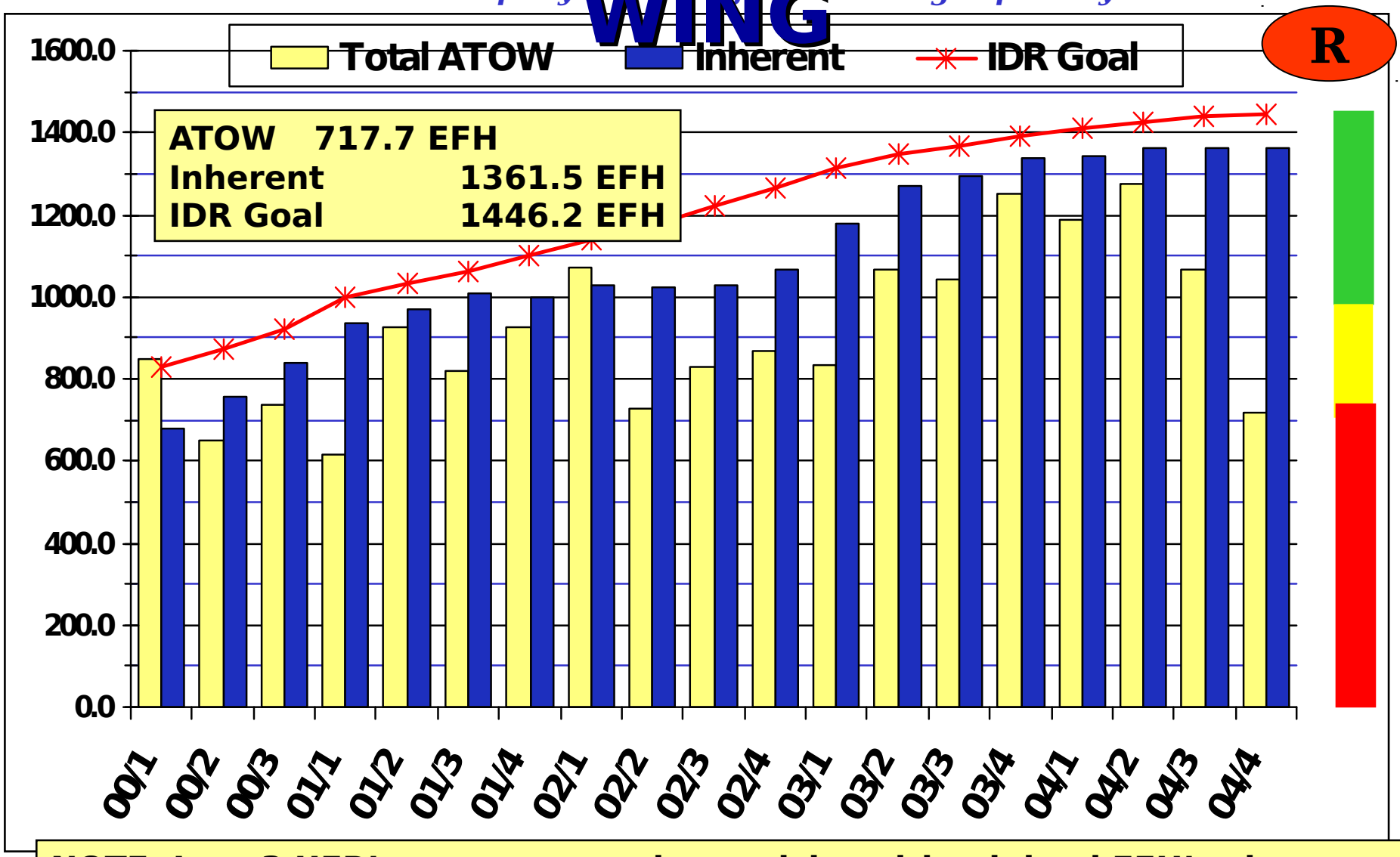
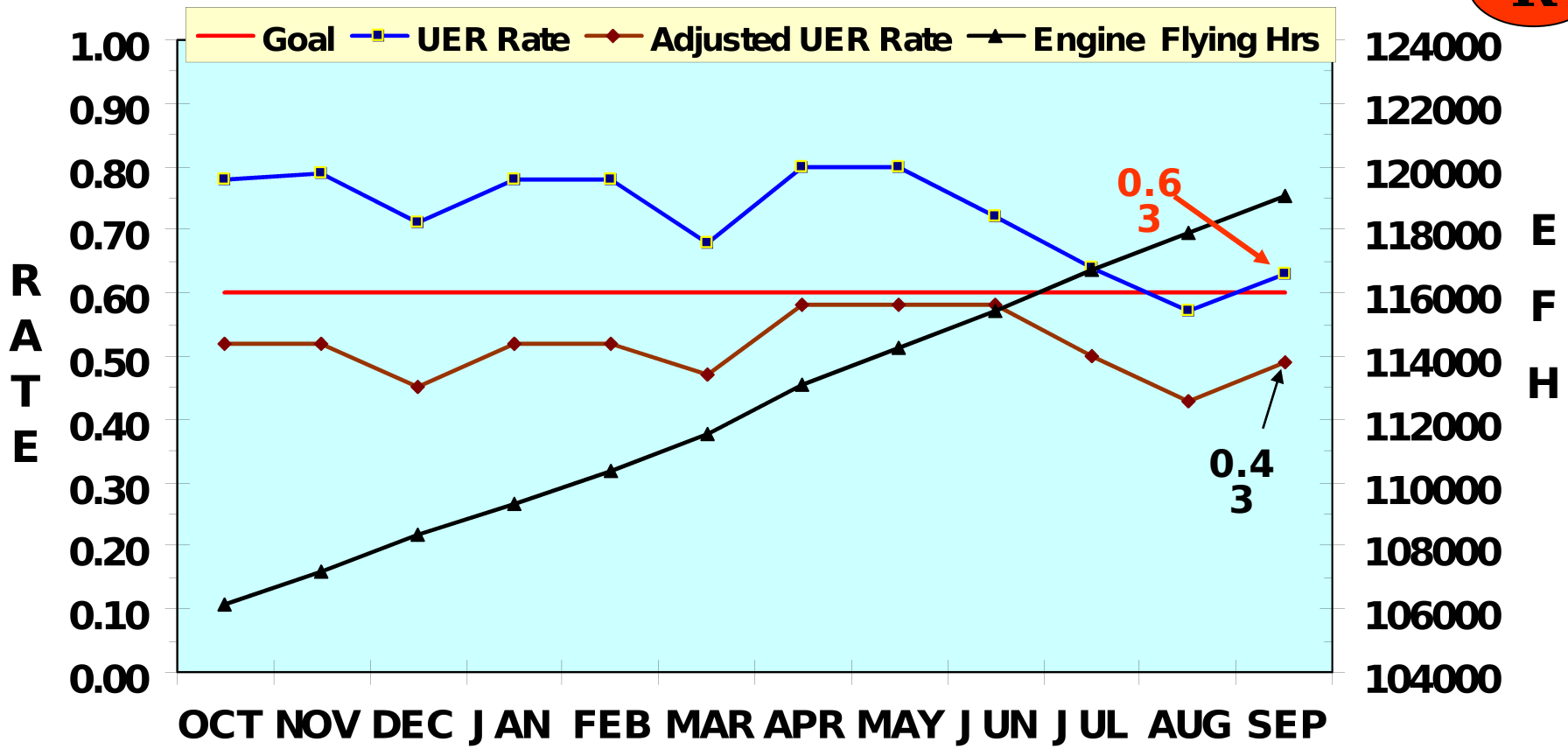


NOTE: Last 3 UER's were repeat depot visits with minimal EFH's since previ

1 Oct 03 – 30 Sep 04
Unscheduled Engine Removal Rate

Rapidly delivering war-winning capability

R



NOTE:

<u>Adjusted UER Rate</u> – Does not include those engines pulled where an ACFT problem was identified as the cause; no action was taken on the engine or CND at depot.

590133 – Engine Vibration – Engine sent from OL straight to Beale AFB

590134 – Low Power/Thrust – Engine sent to depot, replaced EFTC and Pyrometer

Flight Hour Distribution

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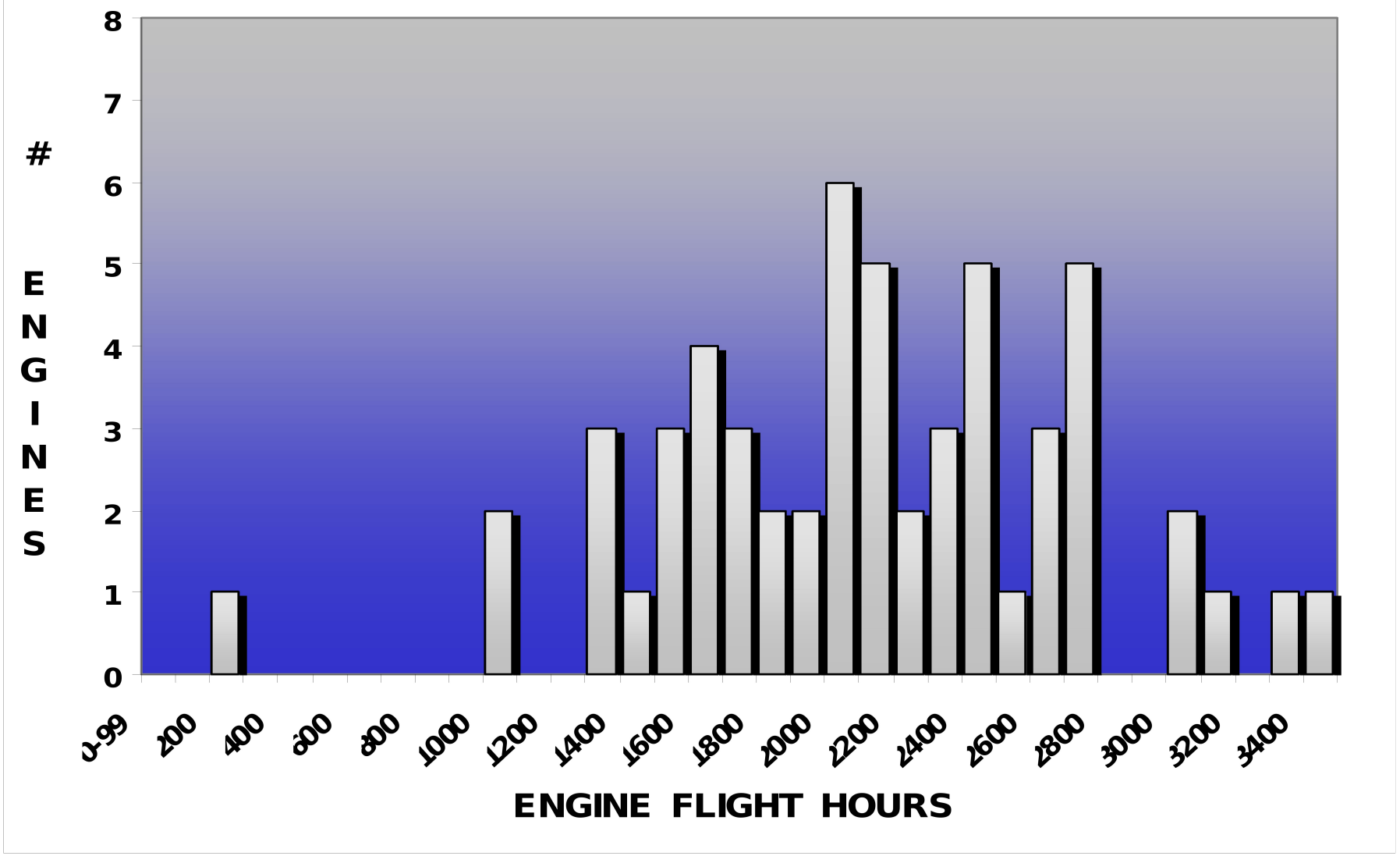

Engine Cycle Distribution

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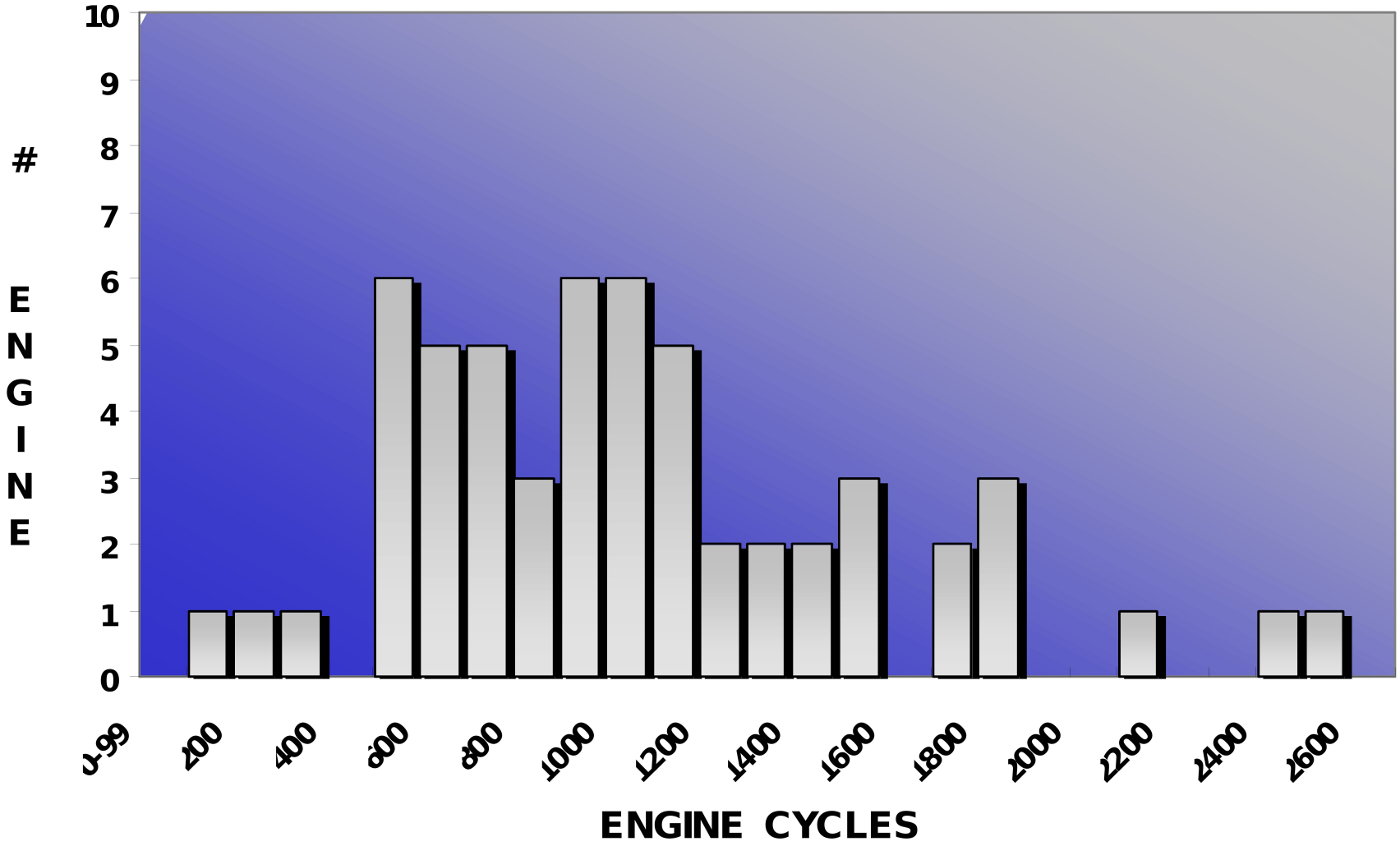
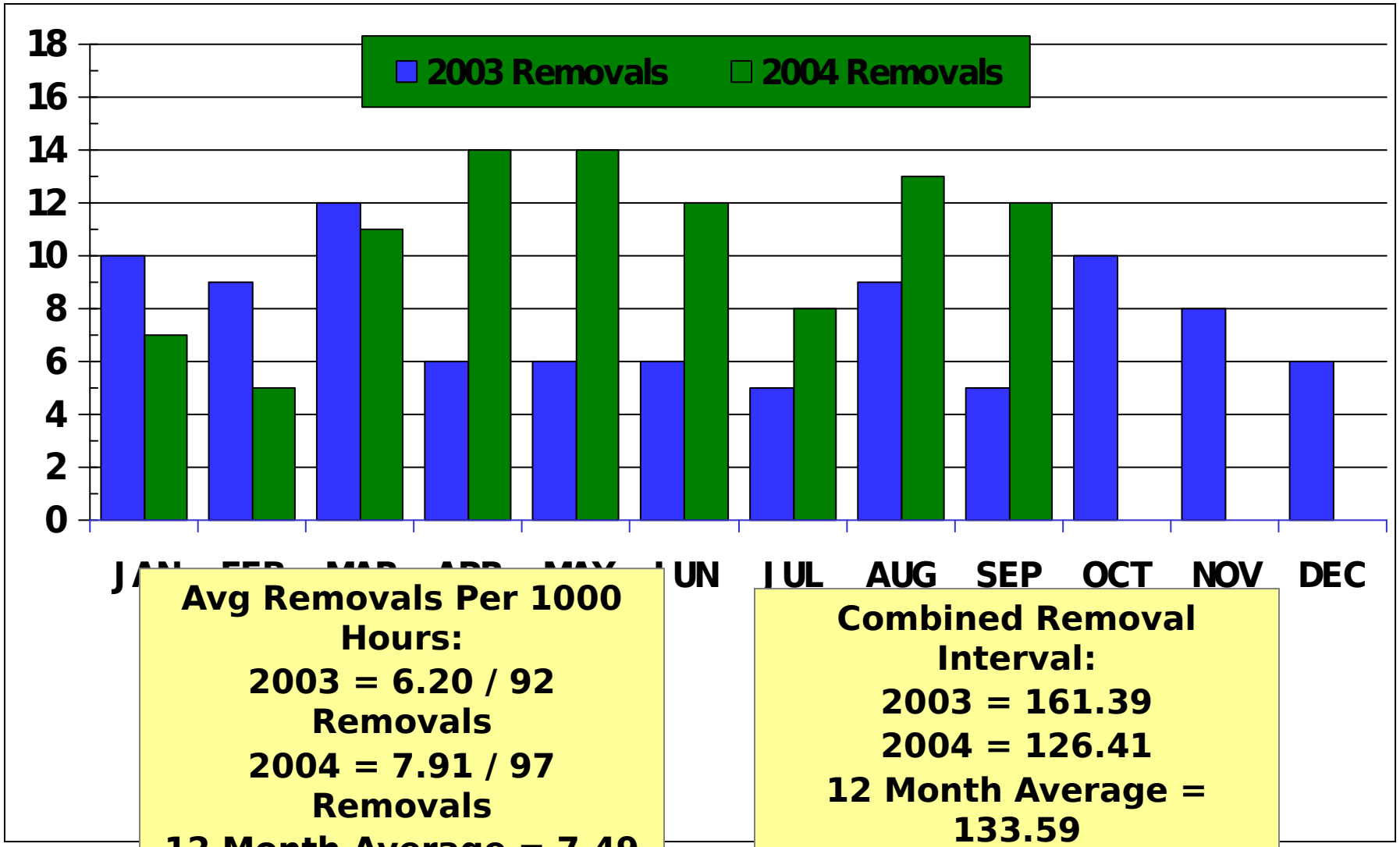


REMOVALS
1 Jan 03 – 30 Sep 04

Rapidly delivering war-winning capability



Avg Removals Per 1000 Hours:
2003 = 6.20 / 92 Removals
2004 = 7.91 / 97 Removals
12 Month Average = 7.49

Combined Removal Interval:
2003 = 161.39
2004 = 126.41
12 Month Average = 133.59

12 MONTH REMOVALS

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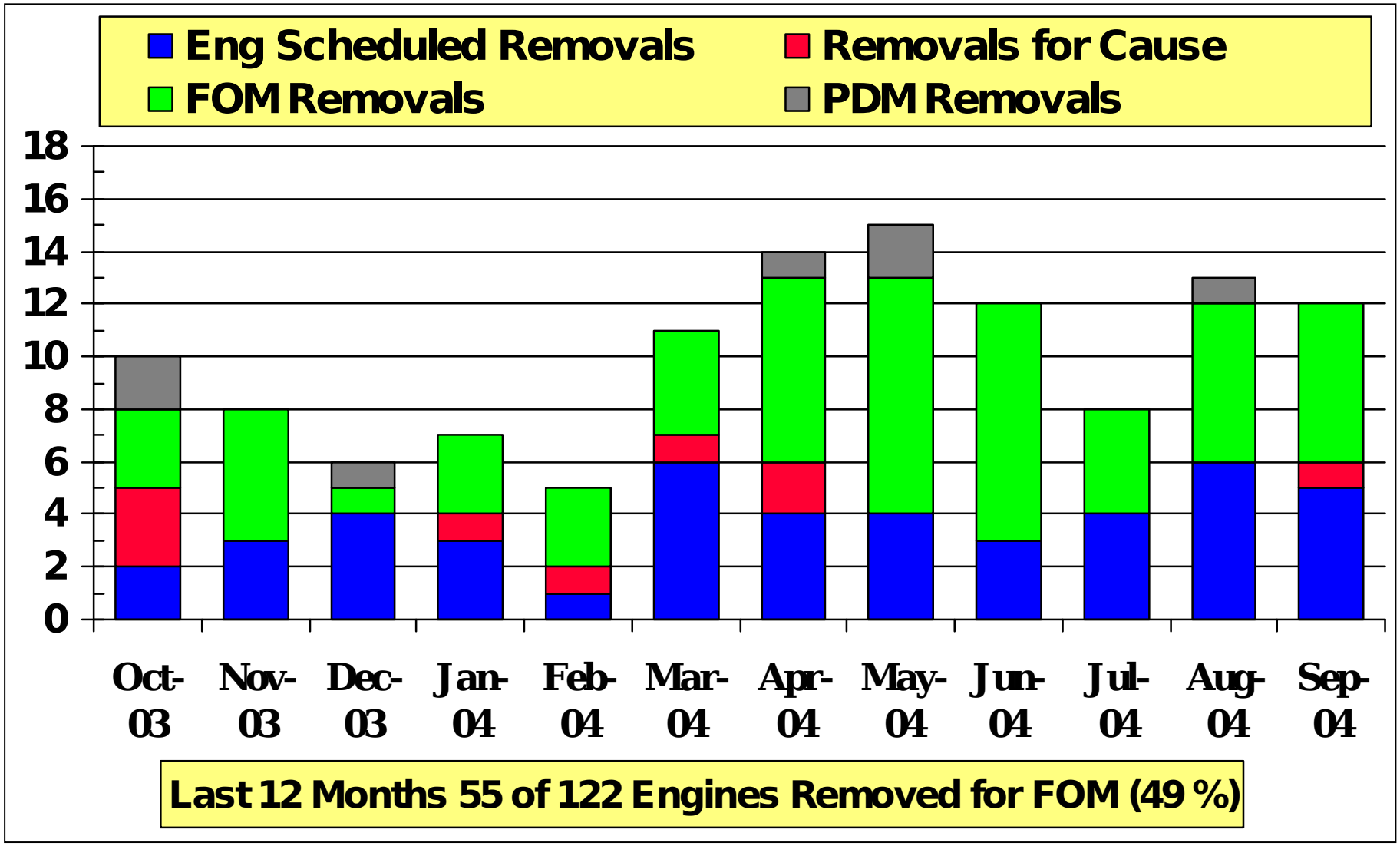


Last 12 Months 55 of 122 Engines Removed for FOM (49 %)

FY04
UNSCHEDULED ENGINE REMOVALS

Rapidly delivering war-winning capability

FY 04 Removals

Eng/Loc	Date	Depot	A/C	Driver		Status
590121/B		Sep 04		Y	1064	Binding/Rubbing
	At GE/Edwards for Repair					
590134/D4		Apr 04		Y	1077	Low Power/Thrust
	Replaced EFTC and Pyro					
590149/B		Apr 04		Y	1069	Oil Leak
	Oil Wetness in LPT					
590155/D4		Mar 04		Y	1099	Smoke on Shutdown
	Turbine Drain Plugged					
590104/D4		Feb 04		Y	1084	Bent 4th Stg Blade
	INW					
590154/B		Jan 04		Y	1070	FOD
Replaced blade						
590148/FT		Oct 03		Y	336	Aft Drain Oil Leak
	O-Ring/Gasket Replaced					
590113/B		Oct 03		Y	1068	Aft Sump Oil Leak
	O-Ring/Gasket Replaced					
590151/FT		Oct 03		Y	1064	Low Oil Pressure
	Replaced Seal Housing					

FY03
UNSCHEDULED ENGINE REMOVALS

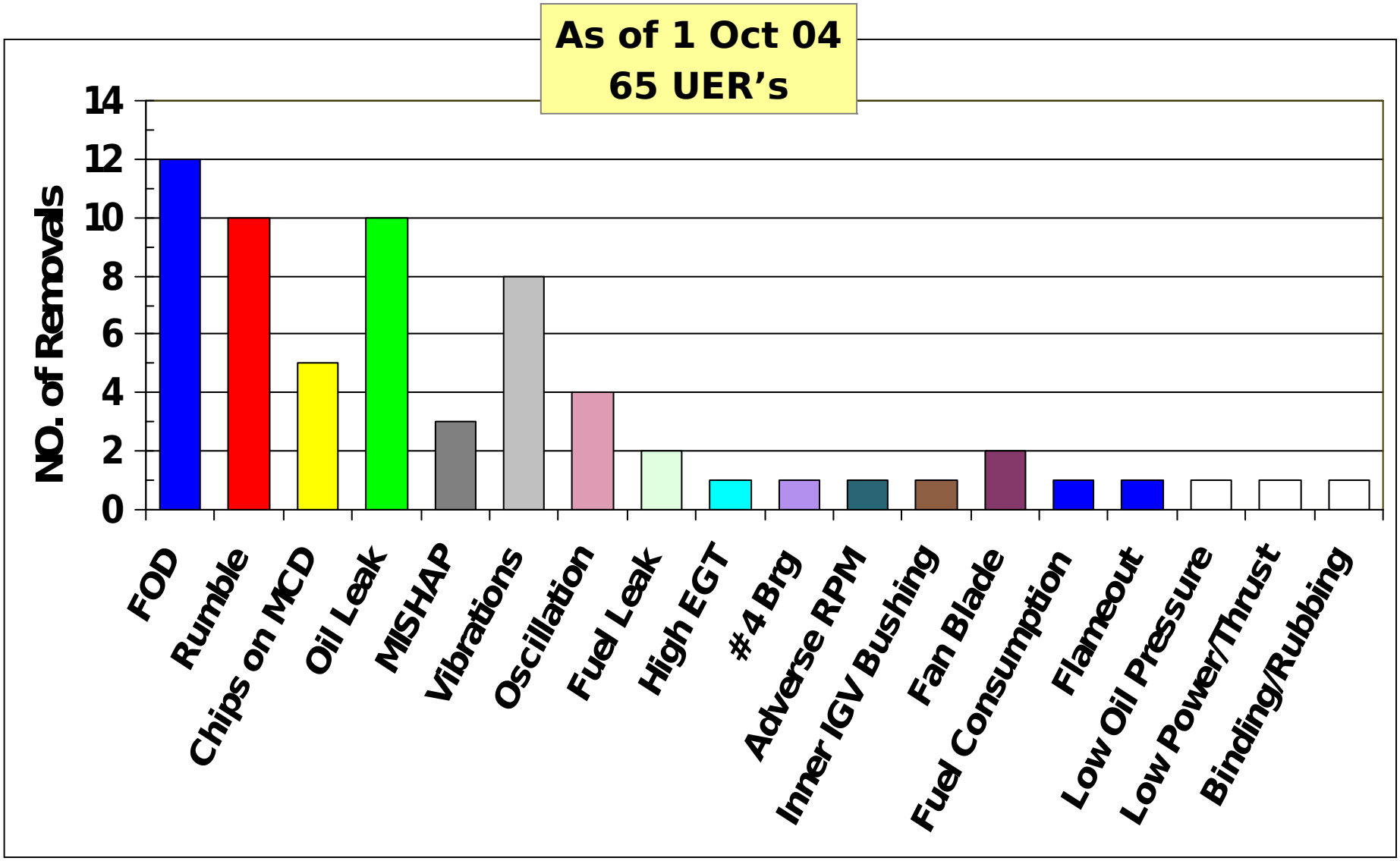
Rapidly delivering war-winning capability

FY 03 Removals

Eng/Loc	Date	Depot	A/C	Driver	Status
590142/D4	Aug 03	Y	1070	Front Sump Oil Leak O-Ring Replaced	
590130/FT	Jul 03	Y	336	Flameout MEC Contamination	
590146/D1	Jun 03	Y	1066	High Fuel Consumption Met Specs	
590133/D4	Apr 03	N	1073	Engine Vibration CND - Serviceable	
590134/D4	Mar 03	Y	1084	1st Stage Fan Blade Crack RTN Field/No Crack	
590149/D4	Mar 03	N	1076	Oscillation/Nozzle Carbon Serviceable RFI	
590151/N	Mar 03	Y	1097	IGV Inner Bushing Wear R&R Bushings	
590122/D4	Feb 02	N	1076	Engine Idle Vibration Serviceable/TM Changes	
590124/B	Dec 02	Y	1079	Engine Vibration C/W	
590108/P	Oct 02	Y	1086	Engine Vibration	C/W

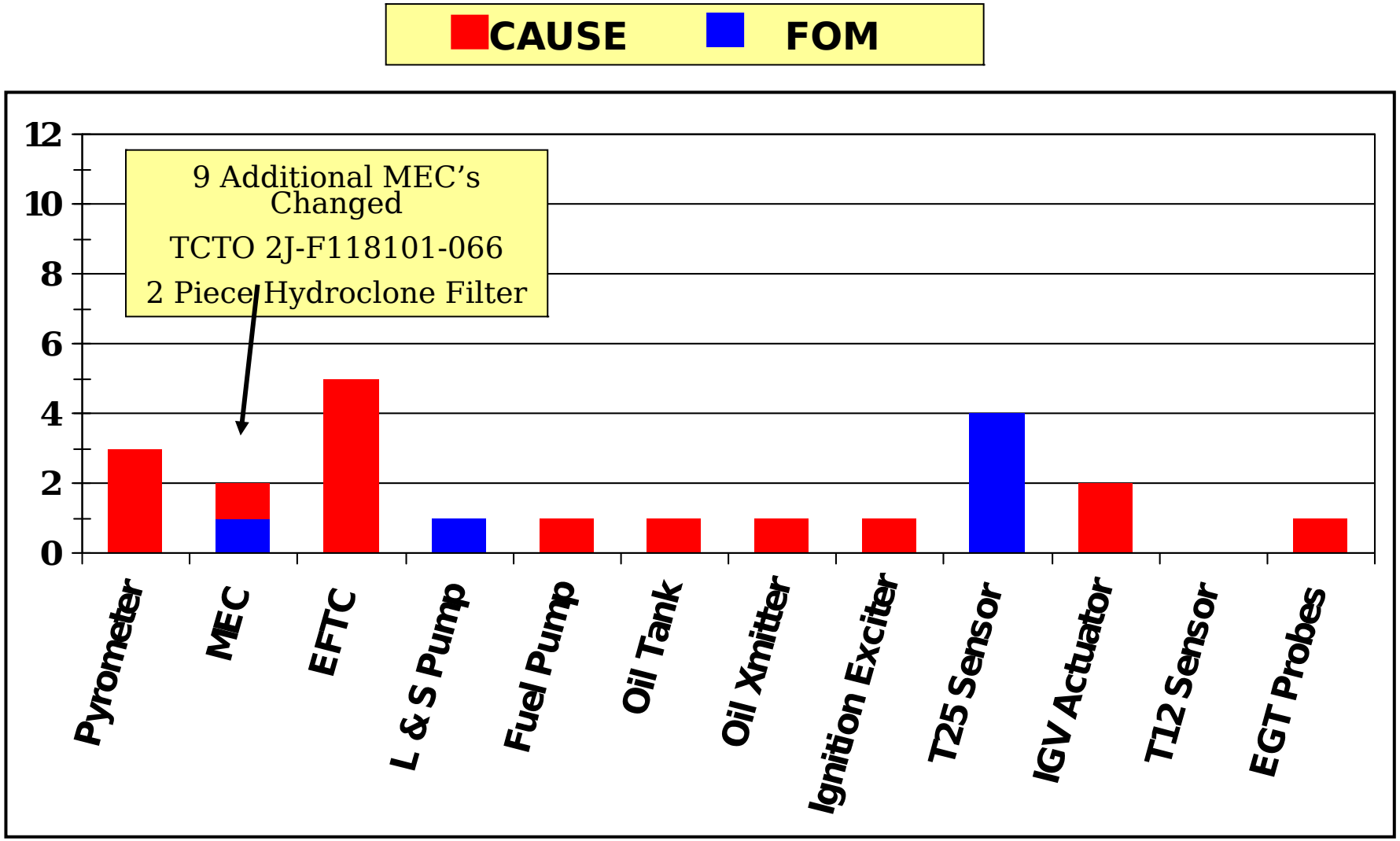
UER DRIVERS

Rapidly delivering war-winning capability



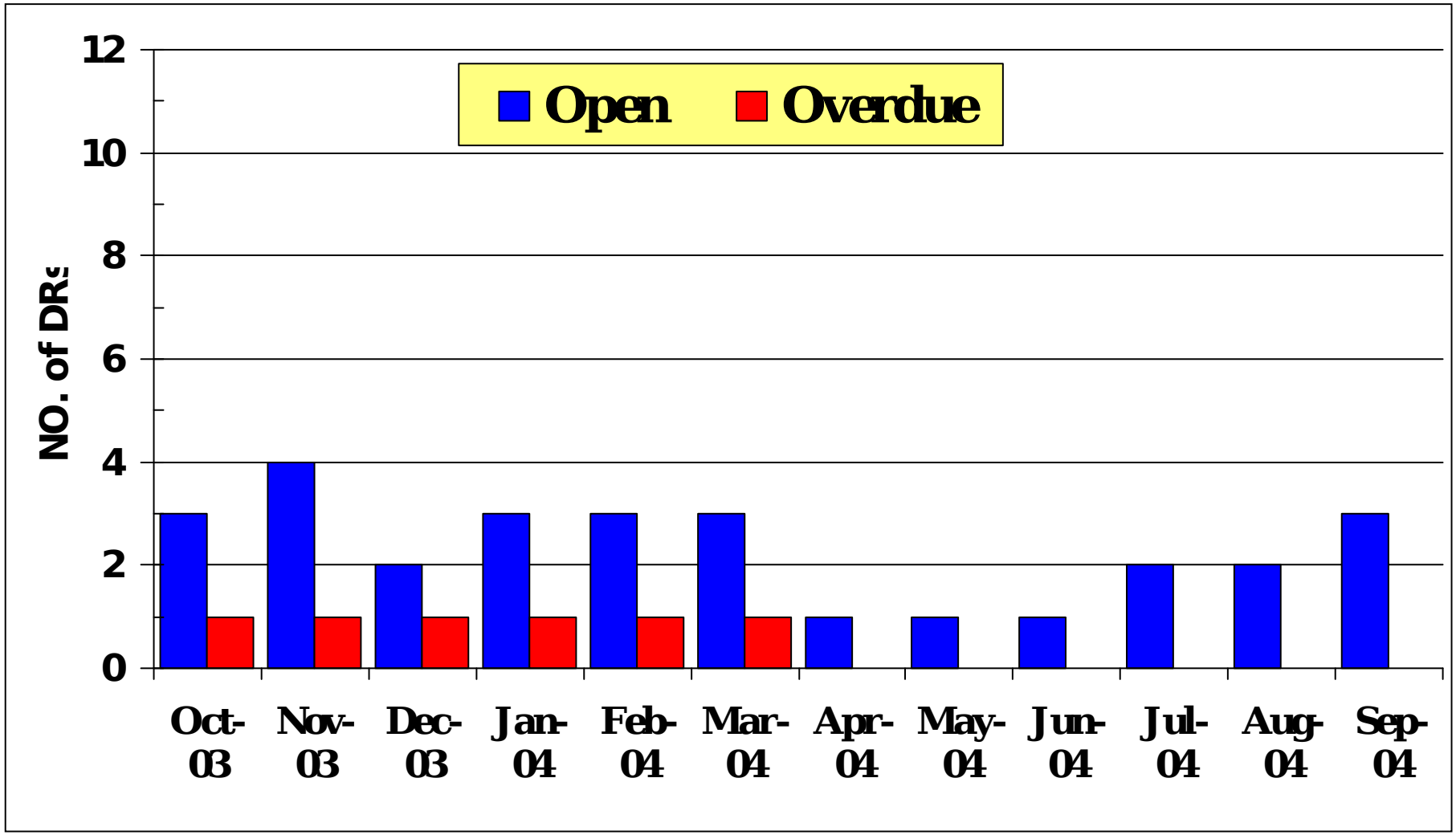
LRU DRIVERS
1 Oct 03 – 30 Sep 04

Rapidly delivering war-winning capability



DEFICIENCY REPORT STATUS

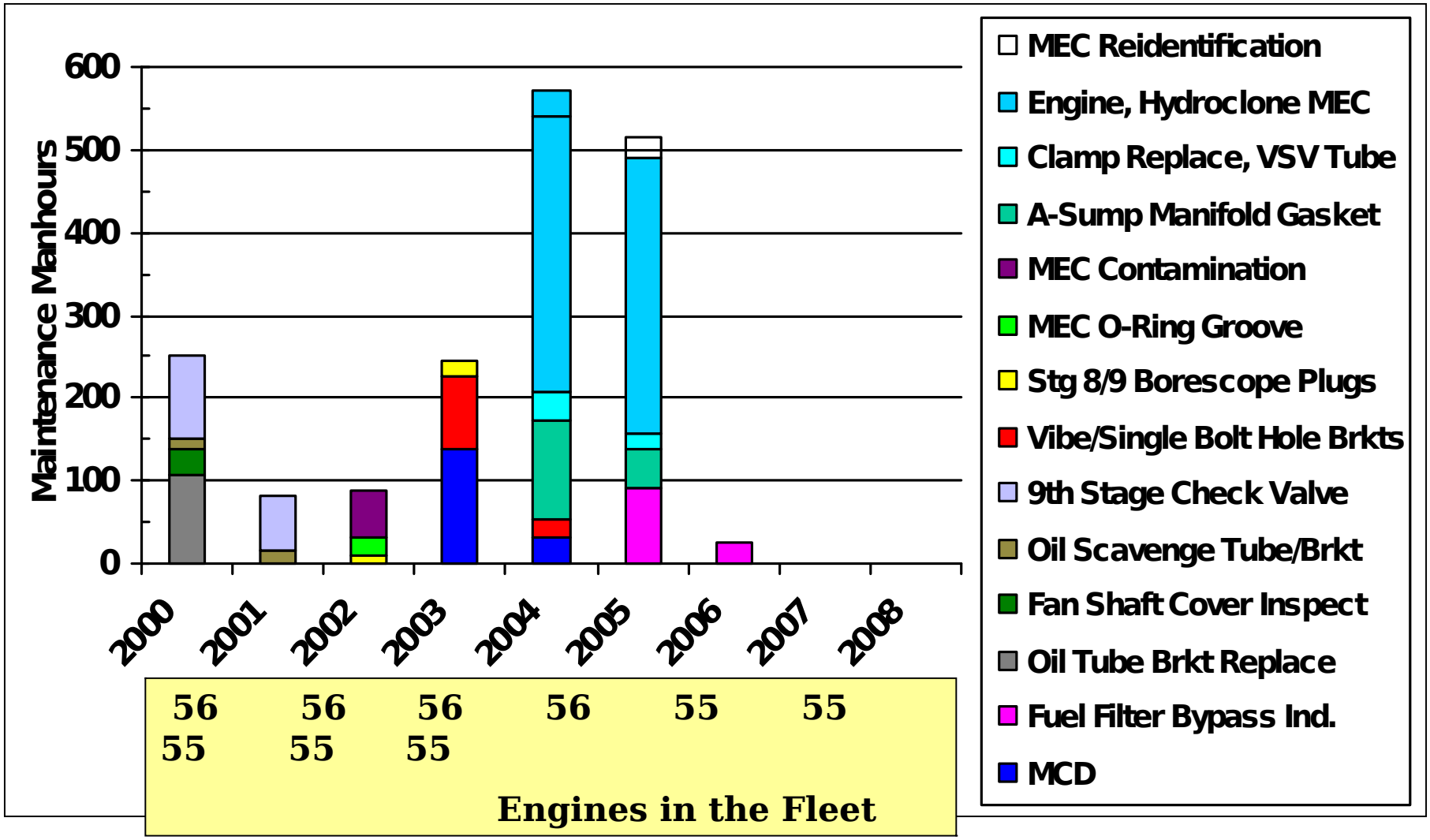
Rapidly delivering war winning capability



FIELD TCTO INSPECTIONS

U.S. AIR FORCE

Rapidly delivering war-winning capability



FIELD TCTO STATUS
1 Oct 04

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TCTO Title	TCTO Number	Total Required	Number Accomplished
MEC Re-Identification	2J -F118101-0067	27	4
MEC Replacement (Hydroclone Filter)	2J -F118101-0066	55	25
A- Sump Manifold Gasket	2J -F118101-0062	55	42
Vibe/Single Bolt Hole Brackets	2J -F118101-0059	56	54
Fuel Filter Imminent Indicator (Pump)	2J -F118101-0058	Awaiting Release	Awaiting Release
Fuel Filter Impending Indicator (Engine)	2J -F118101-0057	Awaiting Release	Awaiting Release
Stage 8/9 Borescope Plug	2J -F118101-0055	56	55
9th Stage Check Valve	2J -F118101-0053	56	56
Inspect Oil Scavenge Tube for Wear	2J -F118101-0052	56	56
Master Chip Detector	2J -F118101-0048	55	55

DEPOT TCTO STATUS

1 Oct 04

Rapidly delivering war-winning capability

TCTO Title	TCTO Number	Total Required	Number Accomplished
MEC O-Ring Groove	2J -F118101-0061	7	7
Replace #4 Bearing/Retaining Nut	2J -F118101-0060	55	16
Lube and Scavenge Pump Upgrade	2J -F118101-0056	73	15
T25 Sensor Rework	2J -F118101-0054	161	19
Oil Scavenge Tube Bracket Rework	2J -F118101-0051	56	19
HPT Disk Inspection and Re-Identification	2J -F118101-0050	43	12
Turbine Frame Oil Tube Heat Shield	2J -F118101-0049	59	24
Forward Sump Cover Modification	2J -F118101-0045	56	15
Stage One Fan Blade Inspection	2J -F118101-0041	1554	446
HPT Nozzle Cooling Cover Rework	2J -F118101-0040	56	20
Turbine Frame Fwd Liner Support	2J -F118101-0039	59	59
Auxiliary Oil Tube Bracket	2J -F118101-0038	58	16
Moeller Fittings	2J -F118101-0037	56	13
Lube and Scavenge Pump Improvements	2J -F118101-0036	71	32
MEC Upgrade to 1754M92P05	2J -F118101-0035	57	22

DEPOT TCTO STATUS

1 Oct 04

Rapidly delivering war-winning capability

Continued

TCTO Title	TCTO Number	Total Required	Number Accomplished
Electrical Bracket Replacement - Clips	2J -F118101-0034	5	3
VSV Long Term Improvements Bell Cranks	2J -F118101-0033	16	9
VSV Arm material Change	2J -F118101-0032	28	10
VSV Reliability Improvements	2J -F118101-0031	16	8
Inspection of Sump Ejector Tube Seals	2J -F118101-0030	15	9
HPT Disk Forward Rabbet Inspection	2J -F118101-0029	4	1
Aft Centerbody Under Min Inspection	2J -F118101-0027	28	21

ISSUES

Rapidly delivering war-winning capability

- JP8+100 Conversion
- 4 MM Combustor Cowl Inspection
- MEC Hydroclone Filter

JPTS to JP-8+100 CONVERSION

U.S. AIR FORCE

AERONAUTICAL SYSTEMS CENTER

Rapidly delivering war-winning capability

Status: 1 Oct 04 Update

Background: AFRL/PRTG continued U-2 simulator testing and combustion testing on two 2nd generation low-temperature additives through March 2004

- Low-temperature results of both 2nd generation additives equivalent to benchmark JPTS
- Combustion testing of both 2nd generation additives (deposit and relight) revealed similar performance to JP8+100

- **AFRL/PRTG Progress**
  - AFRL/PRTG claimed Technology Readiness Level 6 (TRL-6) for both additives
  - Transition Plan calls for two additives to be transitioned to ASC/RA SPO
  - Additives are ready for engine, airframe pre-qualification
  - AFRL submitted JP8+100LT for OSD Technology Transition Initiative (TTI) funding ($2M/year)
- **ASC/RA Progress**
  - Initial IPT meetings held
  - SPO is looking to transition the technology to both the U-2 and Global Hawk
  - Next opportunity for funding is the FY08 POM
  - ACC and ASC/RA are looking for other transition funding sources
  - ACC and ASC/RA Briefing planned for Defense Logistics Agency (DLA) in an effort to obtain needed transition funding
  - ASC/RA submitted JP8+100LT for OSD Technology Transition Initiative (TTI) funding ($2M/year)

4MM Combustor Cowl Inspection

Status: 1 Oct 04 Update

- TM Changes completed (awaiting validation)
- 4MM Borecopes procured
- Locally manufactured tooling being worked
- Procurement of additional tooling in work
  - Tool kits to be developed upon receipt of tools
- Validation/Verification of procedures required after receipt of tooling
  - Validation effort tentatively scheduled for late Oct 04
- Inspections to begin with completion of above
  - Tentative start date 15 Nov 04

MEC Hydroclone Filter

Rapidly delivering war-winning capability

Status: 1 Oct 04 Update

- 2 TCTO's released
  - TCTO 2J-F118101-0066, Inspection & Replacement of suspected MEC's with 2 piece hydroclone filter
    - TCTO Requires inspection of all MEC SN's along with replacement of suspect SN's
    - 25 of 55 Inspections C/W
    - All affected installed engine MEC's at OL's C/W
    - 4 affected installed engine MEC's at Beale C/W
    - 4 additional MEC's in shipment to Beale AFB
    - 5 Additional MEC's in work at Woodward
  - TCTO 2J-F118101-0067, Re-identification of all fielded 1 piece hydroclone filter MEC's
    - TCTO released 2 Sep 04
    - Requires a "N" to be stamped on data plate
      - "N" identifies one piece hydroclone filters
    - 4 of 27 C/W

ENGINE LIFE MANAGEMENT

U.S. AIR FORCE

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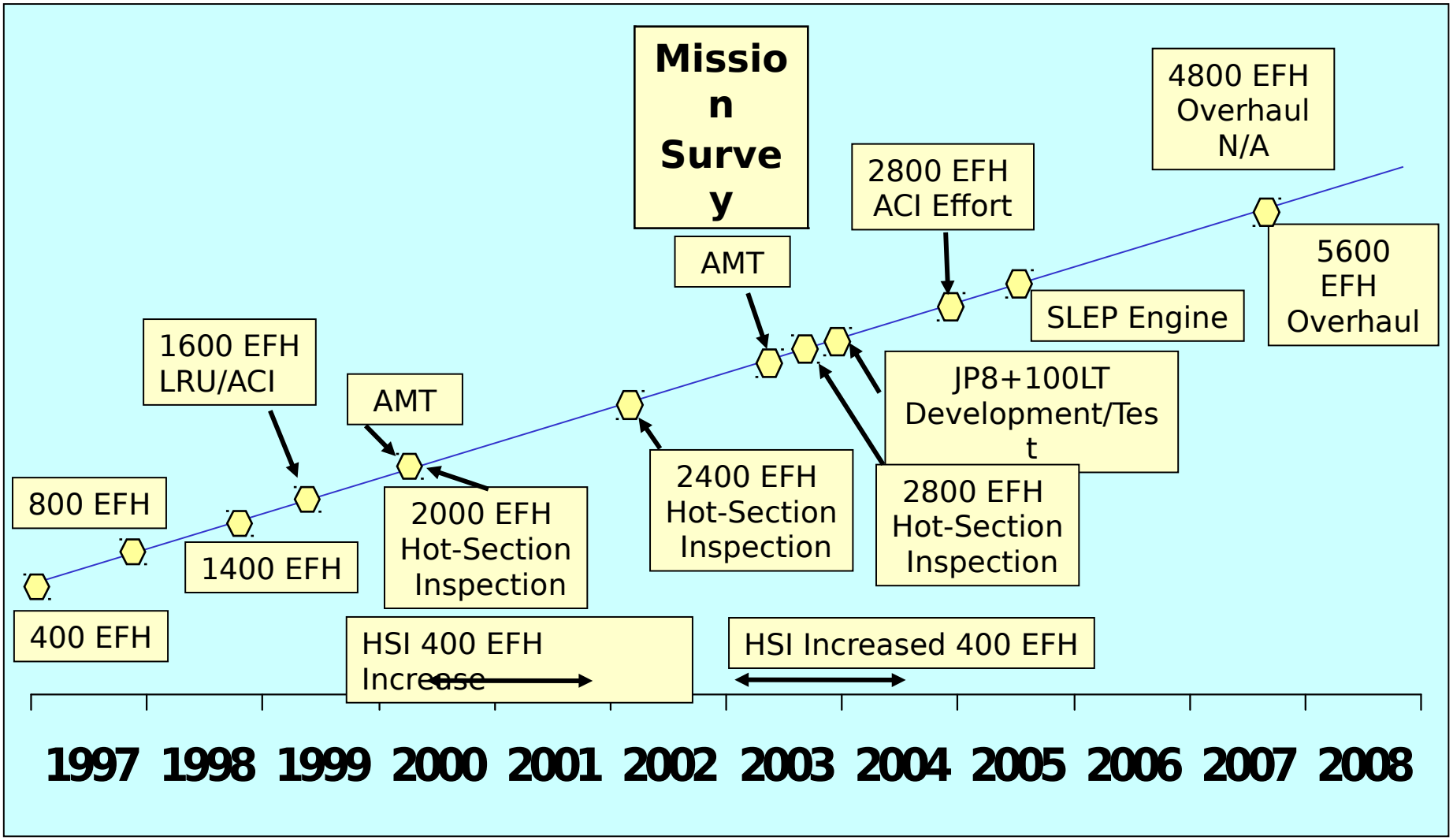

PROGRAM ASSESSMENT

U.S. AIR FORCE

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Areas	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	Get Well Date and/or Comments
Performance	G	G	G	G	G	G	G	G	G	G	G	G	
Cost Performance	G	G	G	G	G	G	G	G	G	G	G	G	
Funding	G	G	G	G	G	G	G	G	G	G	G	G	
Contracts	G	G	G	G	G	G	G	G	G	G	G	G	
Production/Spares	Y	Y	Y	Y	Y	G	G	G	G	G	G	G	
Management Structure	G	G	G	G	G	G	G	G	G	G	G	G	
OVERALL	G	G	G	G	G	G	G	G	G	G	G	G	
KEY													
GREEN =	**ON TRACK**												
YELLOW =	**POTENTIAL/ACTUAL PROBLEM**												
RED =	**MAJOR PROBLEM**												

FY02 – FY03
UNSCHEDULED ENGINE REMOVALS

Rapidly delivering war-winning capability

FY 03 Removals

Eng/Loc	Date	Depot	A/C	Driver	Status
590142/D4	Aug 03	Y	1070	Front Sump Oil Leak	INS Depot
590130/FT	Jul 03	Y	336	Flameout	MEC Contamination
590146/D1	Jun 03	Y	1066	High Fuel Consumption Met Specs	
590133/D4	Apr 03	N	1073	Engine Vibration	CND - Serviceable
590134/D4	Mar 03	Y	1084	1st Stage Fan Blade Crack	RTN Field/No Crack
590149/D4	Mar 03	N	1076	Oscillation/Nozzle Carbon	Serviceable RFI
590151/N	Mar 03	Y	1097	IGV Inner Bushing Wear	R&R Bushings
590143/Q	Aug 02	N	3297	Engine Vibration	Serviceable/TM Changes
590144/Q	Jun 02	N	1094	Oil Leak	C/W
590146/B	May 02	N	1065	Adverse RPM Trend	C/W
590108/P	Oct 02	Y	1086	Engine Vibration	C/W

FY 02 Removals

Eng/Loc	Date	Depot	A/C	Driver	Status
590122/D4	Feb 02	N	1076	Engine Idle Vibration	A/I/Sea Level Testing
590124/B	Dec 02	Y	1079	Engine Vibration	C/W
590118/FT	Feb 02	N	336	FOD	C/W